Enhancing Confidentiality in a Clinical Information System

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Although there may be many threats to the security and confidentiality of computer-based medical information, one of the most common and difficult to deal with is that of inappropriate access to information by authorized users of the system. The CCC system at Beth Israel Hospital is a highly integrated, heavily used hospital information system. It has always tried to deal with inappropriate access by tracking actions of users and holding them accountable for their actions. Virtually every keystroke within the clinical information system is tracked by user, patient, terminal used, information accessed, and the time at which the use took place.

The intent of such tracking is to have a clinical computing system that has minimal barriers to appropriate access while deterring inappropriate access. In order for such a deterrent to be effective, users must be aware that their actions are tracked. They must also believe that there are negative consequences when inappropriate behavior becomes known. Beth Israel has, in the past, dealt harshly with inappropriate accesses to patient information, with responses that have at times included dismissal of the user who behaved inappropriately. In examining the cases of several breaches of confidentiality, however, it became apparent that employees of the hospital were often not aware that their behavior was being tracked.

We came up with three complementary strategies to try to deter inappropriate access to patient information without introducing significant barriers to appropriate access. First, we recognized that there appeared to be a knowledge deficit among users of the system about its tracking capabilities, as well as about the potential consequences to the user that might result from inappropriate access to patient information. It also seemed likely that some users of the system also had a knowledge deficit about the importance of maintaining the confidentiality of patient information. As such, we implemented a series of teaching screens that are presented every time a user gets a new password on the system (at least every six months).

Second, we added a question to the system asking the reason for access when a user looks at information on a given patient for the first time, and provided a menu of responses which include the common appropriate reasons for access. For a given user and patient, the computer will not re-ask a reason for access for a period of time which depends on the initial response.

Third, we added the ability to automatically notify a provider that a patient's record had been accessed by a new user. Under the system, any time a user gives a reason for access to the record of an outpatient (typically the first time he or she views the record) a provider may be notified of the access as well as the given reason. Primary care providers are automatically notified of such access on all their patients unless they choose to discontinue such default notifications. Any provider may choose to be notified about access to specific patient records.

In 33 days since implementing this system on 1/22/96, we recorded 103,556 reasons for access to patient records. The reasons for an additional 206,121 accesses to patient records were inferred from previous accesses or other information available to the computer system. Sixty-two of approximately 133 primary care providers chose to discontinue default notification. Seventeen patient records were individually monitored by 12 providers who were not getting default notification.

The enhancements to the system result in only minimal delays in appropriate access to patient records. Generally, for every first access to a patient record, a user must type two additional keystrokes. We feel, however, that this system has greatly enhanced the sense of accountability by users for their actions, and in addition is teaching users the appropriate reasons for accessing clinical information.